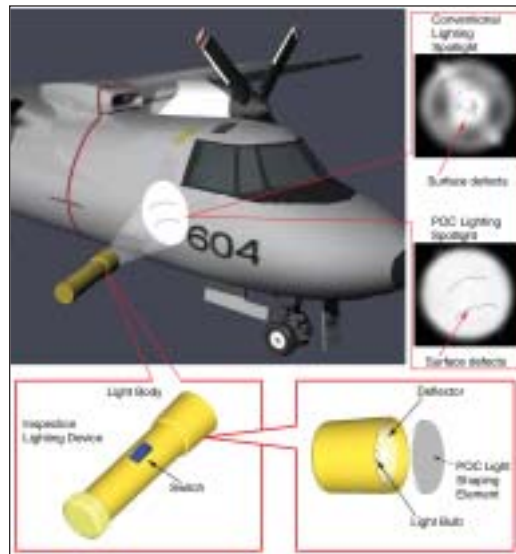


## Passive Light-Shaping Elements

### PHASE III IMPACT

- Over 425,000 units sold to date, generating more than \$870,000 in sales.
- \$2,591,000 in commercial and Government/DoD Research and Development funding.
- ISO-9001 certified production, with sales in the U.S. and Asia.



Physical Optics Corporation (POC) developed a new technology for manufacturing passive optical components that can perform spectral and angular redistribution of energy carried by wavefronts of coherent and partially coherent radiation. These components are fabricated using holographic techniques involving laser recording of submicron diffraction and interference patterns in photosensitive materials. Their design includes features based on statistical properties of radiation. In particular, this technology provided a foundation for a family of Passive Light-Shaping Elements (PLSE) which can be mass-replicated at low cost. These components have been a gateway for POC's entry into the lighting and nondestructive evaluation (NDE) markets. They have also found important applications in high power laser optics, countermeasures, and optical sensing. PLSEs allow to achieve energy efficient, angularly limited, fully homogenous outputs from nonuniform distributed light sources. They have been found critical for aircraft inspection lighting. This is because currently

80% of all aircraft are inspected visually with special handheld flashlights, which produce irregular illumination, with multiple dark/bright spots. This leads to frequent inspection errors because the user has to repeatedly scan the beam to make out details. POC's PLSE dramatically improves output beam quality, eliminating glare and hot spots entirely. These advantages of PLSE products were confirmed by an extensive field study performed in collaboration with Ross Aviation, Albuquerque, NM, and Mesa Airlines, Farmington, NM, with the participation of inspectors from the American Airlines Maintenance and Engineering Center in Tulsa, OK, and the Air Transport Association Nondestructive Testing Forum. These tests demonstrated that these POC products strongly improve inspection accuracy, which is critical for national security and transportation safety. This project made an important contribution to POC development of mass-production capabilities in holography, and to commercialization of products now in use on military bases and by many customers around the world.



Inspection Lighting Device with POC's  
Light Shaping Element